

# Chronic Kidney Disease (CKD) in Cats

- common disease in older cats
  - **irreversible and progressive** loss of kidney function
  - rate of progression highly variable, requiring regular monitoring
  - vs. acute kidney disease (which may be reversible)
- **symptoms = increased peeing, increased drinking, decreased appetite** (may progress to nausea/vomiting), **weight loss, weakness, bad breath**
- various causes
  - inherited, cancer, long-term inflammation, infection, obstruction, toxin, kidney injury
  - investigating cause is important as some can be treated (infection, obstruction)
    - abdominal ultrasound
    - abdominal x-ray
  - most often, a cause is not identified
- consequences of kidney disease are related to changes in the many function so the kidneys
  - filter blood; remove some things to excrete in urine, while salvaging other things
    - loss of filtration → increased toxins in the blood, loss of protein, water, electrolytes → **dehydration, sores in mouth/gut**, nausea/vomiting, further kidney damage
  - product signal for making new red blood cells
    - loss of signal → **anemia** (low red blood cells)
  - help regulate mineral (calcium-phosphorous) balance
    - loss of regulation → renal secondary hyperparathyroidism → **softened bone, organ damage**
  - produce signal for modifying blood pressure
    - altered signal → hypertension (high blood pressure) → organ damage, **blindness**, further kidney damage
- severity of kidney disease is determined using a series of diagnostic tests
  - **basic bloodwork and urinalysis** – elevation in kidney values AND dilute urine → **creatinine** level determines a **stage of 1 (early disease) to 4 (late disease)**
    - if kidney values are elevated, the kidneys have already lost 75% function
  - additional urine testing [**urine protein creatinine (UPC) ratio**] determines if the kidneys are leaking excessive protein (“proteinuric”), as this suggests more severe disease requiring additional treatment
    - urine culture may also be recommended, as dilute urine predisposes to infection
  - **blood pressure measurement** determines if blood pressure medications are needed to reduce risk of organ damage/blindness
- **diagnostic monitoring is recommended every 3 months** in order to adapt treatment as disease progresses – primarily, blood testing for creatinine, urine testing, and blood pressure monitoring
  - if frequent diagnostics are not possible, they should be pursued was often as possible, and monitoring clinical signs closely at home is essential



*CKD – detailed functions  
of the kidney, diagnostic  
testing and staging*

# Chronic Kidney Disease (CKD) in Cats

- treatment depends on stage/sub-stage
  - kidney diets** – have lower protein, lower phosphorus, lower sodium, higher calories, higher omega fatty acids and antioxidants – studies suggest diet can double survival time
  - fluids** – may be given under the skin (subcutaneously, SQ) or intravenously (IV) – helps to off-set fluid losses/correct dehydration, and dilute toxins
- the goal of treatment is not only for your cat to **live as long as possible**, but also to **live as happily as possible** – if some treatments worsen quality of life, please discuss with your veterinarian

Stage Creatinine (umol/L)	Stage 1 (<140)	Stage 2 (140-250)	Stage 3 (251-440)	Stage 4 (>440)
<b>Diet</b>	<ul style="list-style-type: none"> <li>maintenance OR early kidney diet</li> </ul>	<ul style="list-style-type: none"> <li>early kidney diet OR kidney diet</li> </ul>	<ul style="list-style-type: none"> <li>kidney diet</li> </ul>	<ul style="list-style-type: none"> <li>kidney diet if able but if not, ANY food your cat will eat</li> <li>may need tube feeding</li> </ul>
<b>Fluids</b>	<ul style="list-style-type: none"> <li>encourage drinking (eg. water fountain)</li> </ul>	<ul style="list-style-type: none"> <li>encourage drinking</li> <li>SQ fluids if dehydration present</li> </ul>	<ul style="list-style-type: none"> <li>SQ fluids to rehydrate/for maintenance</li> <li>Some pets may benefit from initial IV fluids</li> </ul>	<ul style="list-style-type: none"> <li>IV fluids until rehydrated, may need repeating</li> <li>SQ fluids maintenance</li> </ul>
<b>Phosphate Binders</b>	<ul style="list-style-type: none"> <li>rarely needed</li> </ul>	<ul style="list-style-type: none"> <li>appropriate if phosphorus is high with kidney diet – help to lower risk of renal secondary hyperparathyroidism</li> </ul>		
<b>Anti-nausea meds, Appetite Stimulants</b>	<ul style="list-style-type: none"> <li>rarely needed</li> </ul>	<ul style="list-style-type: none"> <li>appropriate if vomiting, poor appetite – help to promote eating/weight gain and improve quality of life</li> </ul>		
<b>Medications to decrease protein loss</b>	<ul style="list-style-type: none"> <li>recommended for pets with elevated UPC ratio, as pets with excessive protein loss tend not to live as long and have more rapid progression of kidney damage</li> </ul>			
<b>Medications to lower blood pressure</b>	<ul style="list-style-type: none"> <li>appropriate if elevated blood pressure is present, to lower risk of organ damage and blindness</li> </ul>			
<b>Other medications</b>	<ul style="list-style-type: none"> <li>rarely needed</li> </ul>	<ul style="list-style-type: none"> <li>medications to increase red blood cell production are appropriate if anemia is severe (&lt;20%) and is affecting quality of life</li> <li>specific medications may also be added if other abnormalities or imbalances are seen, such as low potassium, acid-base imbalances, and urinary tract infections</li> </ul>		



*Giving SQ fluids*